REMARKS

This application has been carefully reviewed in light of the Office Action dated July 17, 2006. Claims 1 to 13 are pending in the application, with Claims 12 and 13 having been newly added. Claims 1, 2, 4, 6 and 11 have been amended, and Claims 1 and 11 to 13 are in independent form. Reconsideration and further examination are respectfully requested.

The specification was objected to based on alleged informalities. In particular, it was alleged that page 2, lines 9 and 15 of the specification state "given by the following formula:", but that no formula follows either statement.

The specification has been amended to include formulas, which were inadvertently omitted from the specification, but contained in priority Japanese Patent Application No. 2003-092212. As such, the amendments are seen to be proper under 37 C.F.R. § 1.57(a).

In this regard, the omitted formulas appear at page 3 of priority Japanese Patent Application No. 2003-092212. Applicants respectfully submit that,at the time of this filing, a copy of this priority application was available on the Image File Wrapper of the USPTO's PAIR website. Furthermore, since the specification was only amended to include omitted formulas, an English translation of the foreign priority document is not deemed necessary. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

Claim 11 was objected to based on alleged informalities. In particular, it was alleged that Claim 11 is a method claim which recites the structural limitation of "a

movable structure comprised". The amendments to Claim 11 are seen to attend to this rejection.

In addition, it was alleged that the phrase "electric lines of force emanating from the object" as recited in Claim 11 are simply a graphical representation of the electric field emanating from the object, and not an actual physical property. Claim 11 has been amended to further clarify the invention. In addition, Applicants respectfully submit that there is seen to be an electric interaction between the object to be measured and the signal detection electrode, and that the claimed "electric lines of force" are associated with such interaction.

Reconsideration and withdrawal of the objections to Claim 11 are therefore respectfully requested.

Claims 1, 2 and 5 to 11 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 6,177,800 (Kubby) in view of U.S. Patent No. 6,418,006 (Liu); and Claims 3 and 4 were rejected under 35 U.S.C. § 103(a) over Kubby in view of Liu and further in view of U.S. Patent Application Publication No. 2003/0057977 (Werner). Reconsideration and withdrawal are respectfully requested.

Claims 1 and 11

Referring specifically to the claims, independent Claim 1 as amended is directed to an electric potential measuring device. The device includes a signal detection electrode, and a movable structure comprised of a first solid material portion comprised of a dielectric and a second solid material portion comprised of a conductive material. The device also includes a drive mechanism for moving the movable structure in such a way as to change a positional relationship of the first and second solid material portions for the

signal detection electrode. The movable structure has no aperture and a charge induced on the signal detection electrode is modulated by moving the movable structure, to measure an electric potential of the object to be measured.

Independent Claim 11 as amended is directed to an electric potential measuring method. The method includes the step of preparing between an object to be measured and a signal detection electrode a movable structure comprised of a first solid material portion comprised of a dielectric and a second solid material portion comprised of a conductive material. The method also includes the step of moving the movable structure in such a way as to change a positional relationship of the first and second solid material portions for the signal detection electrode, wherein a charge induced on the signal detection electrode by electric lines of force emanating from the object to be measured is modulated, to measure an electric potential of the object to be measured.

Thus, among its many features, the invention of Claims 1 and 11 provides (i) that a movable structure is comprised of a first solid material portion comprised of a dielectric and a second solid material portion comprised of a conductive material, and (ii) that the movable structure has no aperture and a charge induced on a signal detection electrode is modulated by moving the movable structure (or that a charge induced on the signal detection electrode by electric lines of force emanating from the object to be measured is modulated), to measure an electric potential of an object to be measured. By virtue of these features, there is seen to be improved inhibition of fine particles such as toner from invading a potential sensor. The applied references of Kubby, Liu and Werner are not seen to disclose or suggest at least these features.

As understood by Applicants, Kubby discloses a shutter type potential sensor. Plural windows 34 are provided in a shutter 32. The portion of the windows 34 consists of a gaseous material. See Kubby, Abstract; and Figures 1 to 3.

The Office Action equates Kubby's windows 34 with the claimed first solid material portion. However, the Office Action concedes that Kubby's windows are not solid material. Furthermore, and in view of this concession, Kubby is not be seen to disclose that a movable structure has no aperture and a charge induced on a signal detection electrode is modulated by moving the movable structure (as recited in Claim 1), nor that a charge induced on the signal detection electrode by electric lines of force emanating from the object to be measured is modulated (as recited in Claim 11), to measure an electric potential of an object to be measured.

Liu is not seen to compensate for the deficiencies of Kubby. As understood by Applicants, Liu discloses that a variable MEM capacitor 10 includes a movable plate 12, which is suspended by a mechanical suspension 14 over two fixed plates, a capacitance plate 16 and a bias plate 18. See Liu, Figures 1(a) to 1(c); and column 2, lines 13 to 16.

The Office Action equated Liu's movable plate 12, capacitance plate 16 and bias plate 18 with the claimed movable structure, first solid material portion and second solid material portion, respectively. However, as noted above, Liu's movable plate 12 is suspended over the capacitance plate 16 and bias plate 18. In addition, Liu's capacitance plate 16 and bias plate 18 are fixed. Liu's movable plate 16 is therefore seen to be separate from, rather than comprised of, the capacitance plate 16 and bias plate 18. Accordingly, Liu could not be seen to disclose or suggest that a movable structure is comprised of a first

solid material portion comprised of a dielectric and a second solid material portion comprised of a conductive material.

As such, even if Kubby and Liu are combined in the manner proposed in the Office Action (assuming for argument's sake that such combination would be permissible), the result would not teach at least the features (i) that a movable structure is comprised of a first solid material portion comprised of a dielectric and a second solid material portion comprised of a conductive material, and (ii) that the movable structure has no aperture and a charge induced on a signal detection electrode is modulated by moving the movable structure (or that a charge induced on the signal detection electrode by electric lines of force emanating from the object to be measured is modulated), to measure an electric potential of an object to be measured.

In addition, Werner has been reviewed and is not seen to compensate for the deficiencies of Kubby and Liu.

Allowance of Claims 1 and 11 is therefore respectfully requested.

Claims 12 and 13

Newly-added independent Claim 12 is directed to an electric potential measuring device. The device includes a signal detection electrode, and a movable structure comprised of a first solid material portion which transmits electric lines of force and a second solid material portion which shields from electric lines of force. The device also includes a drive mechanism for moving the movable structure in such a way as to change a positional relationship of the first and second solid material portions for the signal detection electrode. The movable structure has no aperture and a charge induced on the

signal detection electrode is modulated by moving the movable structure, to measure an electric potential of an object to be measured.

Newly-added independent Claim 13 is directed to an electric potential measure method. The method includes the step of preparing between an object to be measured and a signal detection electrode a movable structure comprised of a first solid material portion which transmits electric lines of force and a second solid material portion which shields from electric lines of force. The method also includes the step of moving the movable structure in such a way as to change a positional relationship of the first and second solid material portions for the signal detection electrode, wherein a charge induced on the signal detection electrode by electric lines of force emanating from the object to be measured is modulated, to measure an electric potential of the object to be measured.

Thus, among its many features, the invention of Claims 12 and 13 provides (i) that a movable structure is comprised of a first solid material portion which transmits electric lines of force and a second solid material portion which shields from electric lines of force, and (ii) that the movable structure has no aperture and a charge induced on the signal detection electrode is modulated by moving the movable structure (or that a charge induced on the signal detection electrode by electric lines of force emanating from the object to be measured is modulated), to measure an electric potential of an object to be measured.

The art of record is not seen to disclose or suggest at least these features, for reasons similar to those discussed above.

Allowance of Claims 12 and 13 is therefore respectfully requested.

Accordingly, based on the foregoing amendments and remarks, independent Claims 1 and 11 to 13 are believed to be allowable over the art of record.

The other claims in the application are each dependent from the independent claims and are believed to be allowable over the art of record for at least the same reasons. Because each dependent claim is deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

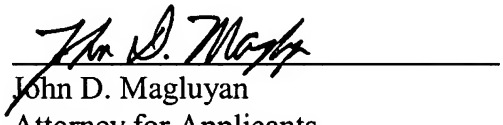
For example, regarding dependent Claims 3 and 4, Werner is seen to disclose a shutter type potential sensor. Figure 6 of Werner is seen to disclose an ASIC ESV modulator, and an insulating portion 211 (a-i). However, in the insulating portion 211 (a-i) of Werner, only 211h is seen to provided in the neighborhood of detection electrode 210. The portion 211h is not seen to be formed on the surface of the detection electrode 210. Furthermore, any conductive layers are not formed periodically on the portion 211h. Although shielding areas 213a to 213d may be seen to consist of conducting material, they are not seen to be formed on the insulator layer, nor are they seen to constitute periodical structure. As such, the shielding areas 213a to 213 d are not seen to correspond to the conducting layer of the invention of Claims 3 and 4.

No other matters being raised, it is believed that the entire application is fully in condition for allowance, and such action is courteously solicited.

Finally, an Information Disclosure Statement accompanies this filing.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,



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